Amendments to the Claims:

Applicant amends Claims 14, 16, and 34 to overcome the Examiner's objections to the claims and cancels Claims 15 and 19 without prejudice. Following entry of the amendments, Claims 1, 3-6, 8-14, 16-18, and 20-51 remain pending in the application and are presented for reconsideration and allowance. This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) An apparatus for detecting the presence of crystalline material in its *in-situ* growth environment, comprising:

a crystal growing incubator having opposing first and second sides and multiple crystal growth environments

an X-ray system, comprising:

an X-ray source disposed adjacent to said first side of said crystal growing incubator, where said X-ray source is configured to irradiate crystalline material grown in said crystal growth environments;

an X-ray detector disposed adjacent to said second side of said crystal growing incubator, where said X-ray detector is configured to detect the presence of diffracted X-rays from crystalline material grown in said crystal growing incubator; and

a positioner that positions said X-ray system and each of said crystal growth environments relative to one another.

2. (Canceled)

3. (Original) The apparatus of claim 1, wherein said crystal growing incubator is a sample holding tray that is configured to grow crystals therein.

4. (Original) The apparatus of claim 1, further comprising an imaging system disposed adjacent to said crystal growing incubator, where said imaging system detects the presence and location of crystals grown in said incubator, such that in use an X-ray beam emanating from said X-ray source is accurately aligned with crystals detected by said imaging system.

5. (Original) The apparatus of claim 1, wherein said X-ray detector is selected from a group consisting of: a charged coupled device (CCD) camera and an imaging plate system.

6. (Original) The apparatus of claim 5, wherein said imaging plate system is a phosphor plate imaging system.

7. (Canceled)

8. (Original) The apparatus of claim 1, wherein said X-ray source emits a monochromatic beam of X-rays consisting of CuKα radiation.

9. (Original) The apparatus of claim 1, wherein said X-ray source emits an X-ray beam with a focus size of 200 microns or less.

10. (Original) The apparatus of claim 1, further comprising a transmitter that transmits information associated with said diffraction pattern to a remote location.

11. (Previously Presented) A method of screening for crystalline material in its *in-situ* growth environment, said method comprising the steps of:

identifying crystalline material in at least one of multiple *in-situ* growth environments;

for each *in-situ* growth environment identified as having crystalline material:

aligning said crystalline material and a X-ray system with one another; and

irradiating said crystalline material in said *in-situ* growth environment with an X-ray beam from said X-ray system;

detecting a diffraction pattern from said crystalline material.

12. (Original) The method of Claim 11 wherein the crystalline material is comprised of a group consisting of: a crystalline powder, a microcrystal, a single crystal, and a plurality of single crystals.

13. (Original) The method of Claim 11 wherein the diffraction pattern is comprised of a group consisting of: a powder diffraction pattern and a pattern of X-ray diffraction spots.

14. (Currently Amended) The method of screening for crystalline material according to claim 11, further comprising, prior to said irradiating, positioning said crystalline material and said X-ray beam relative to each ~~an~~other, such that said X-ray beam accurately aligns with said crystalline material.

15. (Canceled)

16. (Currently Amended) The method of screening for crystalline material according to claim ~~15~~11, further comprising ascertaining the location of said crystalline material in said *in-situ* growth environment.

17. (Original) The method of screening for crystalline material according to claim 16, further comprising storing the location of said crystalline material.

18. (Original) The method of screening for crystalline material according to claim 17, further comprising positioning said crystalline material and said X-ray beam relative to each another based on the location of said crystalline material, such that said X-ray beam accurately aligns with said crystalline material.

19. (Canceled)

20. (Original) The method of screening for crystalline material according to claim 11, wherein said method further comprises the initial step of growing crystalline material in a growth environment.

21. (Original) The method of screening for crystalline material according to claim 20, wherein said growing further comprises producing crystalline material in said growth environment by a method selected from a group consisting of: a vapor diffusion method, a hanging-drop method, a sitting drop method, a dialysis method, a microbatch method, and a gel crystal growth method.

22. (Original) The method of claim 11, wherein said method is performed in space.

23. (Original) The method of claim 11, further comprising determining whether said crystalline material is a protein crystal.

24. (Original) The method of claim 11, further comprising determining whether said crystalline material is a salt crystal.

25. (Previously Presented) A method of screening for crystalline material in its *in-situ* growth environment, said method comprising the steps of:

growing crystalline material in a crystal growing incubator having multiple crystal growth environments;

placing said crystal growing incubator into a positioner;

determining the presence of said crystalline material in at least one of said crystal growth environments;

ascertaining the location of said crystalline material in said at least one of said crystal growth environments;

storing the location of said crystalline material;

for each crystal growth environment identified as having crystalline material:

positioning said crystal growing incubator and an X-ray source relative to each other based on the location of said crystalline material, such that an X-ray beam emitted from said X-ray source accurately aligns with said crystalline material;

irradiating said crystalline material with said X-ray beam;

detecting with a X-ray detector, a diffraction pattern from said crystalline material; and

detecting said diffraction pattern generated from said irradiating.

26. (Original) The method of Claim 25 wherein the crystalline material is comprised of a group consisting of: a crystalline powder, a microcrystal, a single crystal, and a plurality of single crystals.

27. (Original) The method of Claim 25 wherein the diffraction pattern is comprised of a group consisting of: a powder diffraction pattern and a pattern of X-ray diffraction spots.

28. (Original) The method of claim 25, wherein said crystalline material is re-positioned relative to said X-ray beam while said X-ray beam remains stationary.

29. (Original) The method of claim 25, wherein said method is performed in space.

30. (Original) The method of claim 25, further comprising determining whether said crystalline material is a protein crystal.

31. (Original) The method of claim 25, further comprising determining whether said crystalline material is a salt crystal.

32. (Previously Presented) The apparatus of claim 1, wherein said X-ray detector comprises a CCD camera comprising a phosphor screen.

33. (Previously Presented) The apparatus of claim 32, wherein said phosphor screen achieves at least 4 to 8 line-pairs per millimeter resolution.

34. (Currently Amended) An apparatus for detecting the presence of crystalline material in its *in-situ* growth environment, comprising:

a crystal growing incubator having opposing first and second sides, where the crystal growing incubator includes an array of crystal growth environments;

an X-ray system, comprising:

an X-ray source disposed adjacent to said first side of said crystal growing incubator, where said X-ray source is configured to irradiate crystalline material grown in said crystal growth environments~~growing incubator~~; ~~and~~

an X-ray detector disposed adjacent to said second side of said crystal growing incubator, where said X-ray detector is configured to detect the presence of diffracted X-rays from crystalline material grown in said crystal growing incubator; and

a positioner configured to sequentially align each of said crystal growth environments and said X-ray system with one another,

such that in use, crystalline material grown in said incubator can be screened to facilitate the increased reproducibility of successful crystal growth experiments.

35. (Previously Presented) The apparatus of claim 34, further comprising an imaging system disposed adjacent to said crystal growing incubator, where said imaging system detects the presence and location of crystals grown in said incubator, such that in use an X-ray beam emanating from said X-ray source is accurately aligned with crystals detected by said imaging system.

36. (Previously Presented) The apparatus of claim 34, wherein said X-ray detector is selected from a group consisting of: a charged coupled device (CCD) camera and an imaging plate system.

37. (Previously Presented) The apparatus of claim 34, wherein said X-ray detector comprises a CCD camera comprising a phosphor screen.

38. (Previously Presented) The apparatus of claim 37, wherein said phosphor screen achieves at least 4 to 8 line-pairs per millimeter resolution.

39. (Previously Presented) The apparatus of claim 34, wherein said crystalline material is a protein crystal.

40. (Previously Presented) The apparatus of claim 34, wherein said crystalline material is a salt crystal.

41. (Previously Presented) The apparatus of claim 1, wherein said crystalline material is a protein crystal.

42. (Previously Presented) The apparatus of claim 1, wherein said crystalline material is a salt crystal.

43. (Previously Presented) The apparatus of claim 1, wherein said multiple crystal growth environments form an array.

44. (Previously Presented) An apparatus for detecting the presence of crystalline material in its *in-situ* growth environment, comprising:

a crystal growing incubator having opposing first and second sides and multiple crystal growth environments;

an X-ray system, comprising:

an X-ray source disposed adjacent to said first side of said crystal growing incubator, where said X-ray source is configured to irradiate crystalline material grown in said crystal growth environments;

an X-ray detector disposed adjacent to said second side of said crystal growing incubator, where said X-ray detector is configured to detect the presence of diffracted X-rays from crystalline material grown in said crystal growing incubator;

an imaging system disposed adjacent to said crystal growing incubator, where said imaging system is configured to detect the presence and location of crystals grown in said multiple crystal growth environments; and

a positioner configured to accurately align an X-ray beam emanating from said X-ray source with crystals detected by said imaging system.

45. (Previously Presented) The apparatus of claim 44, wherein said crystal growing incubator is a sample holding tray that is configured to grow crystals therein.

46. (Previously Presented) The apparatus of claim 44, wherein said X-ray detector is selected from a group consisting of: a charged coupled device (CCD) camera and an imaging plate system.

47. (Previously Presented) The apparatus of claim 46, wherein said imaging plate system is a phosphor plate imaging system.

48. (Previously Presented) The apparatus of claim 44, wherein said X-ray source emits a monochromatic beam of X-rays consisting of CuKα radiation.

49. (Previously Presented) The apparatus of claim 44, wherein said X-ray source emits an X-ray beam with a focus size of 200 microns or less.

50. (Previously Presented) The apparatus of claim 44, further comprising a transmitter that transmits information associated with said diffraction pattern to a remote location.

51. (Previously Presented) The method of Claim 44 wherein the crystalline material is comprised of a group consisting of: a crystalline powder, a microcrystal, a single crystal, and a plurality of single crystals.